CO-ORDINATION OF ASSETS AND LIABILITIES IN HONG KONG'S COMMERCIAL BANKS

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ABSTRACT:

Asset/Liability management is a planning, implementation and control process for matching the mix and maturities of assets and liabilities in ways that maximize net interest margin on an ongoing basis. The key concept is the coordinated or simultaneous management of both assets and liabilities. The management process works primarily by controlling the gap between rate-sensitive assets and rate-sensitive liabilities. As the Hongkong dollar has been pegged to the U.S. dollar at the official banknote rate of HK$7.8 = US$1.0, interest rates in Hong Kong have followed closely those in the U.S. While the interest rate in the U.S. has become more volatile and have climbed to historically unprecedented high levels, the commercial banks in Hong Kong are increasingly exposed to interest rate risk whenever there is a quantitative imbalance between its fixed-rate liabilities and its fixed-rate assets of the same maturity. Such an imbalance can result in gains or losses in a bank's portfolio if there are unexpected changes in market interest rates.

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The author would also like to extend his gratitude to Dr. William C. Dudley, who has taught me lot of asset/liability management strategies and has given me valuable advice in construction of the framework of this research project.

CHAPTER I

INTRODUCTION

Since the end of the World War II, Hong Kong has developed from an entrepôt to an industrial economy. During the process of transformation there has been a huge demand for banking services. At the same time, the growth in national income and in savings by individuals has led to a rapid expansion of bank deposits. Foreign capital in the form of portfolio and direct investments has also entered Hong Kong, primarily because of its political stability, its low tax rates, and the low level of government intervention in commercial affairs. Thus domestic commercial banks have experienced a period of rapid growth, and foreign banks have also found Hong Kong an attractive place in which to set up branches or representative offices.

Characteristics of Hong Kong's Financial System

Hong Kong is perhaps the freest investment market in the world. Based completely on the principles of a free market economy, Hong Kong has no exchange controls and no distinction is made between resident and non-resident investors. Dealing costs are relatively low and no withholding taxes apply to dividends, although a

tax of 15 per cent on interest arising in or derived from Hong Kong is deducted at source.

In particular, Hong Kong is unique in having no central bank, although the largest domestic bank, the Hongkong & Shanghai Banking Corporation can, if necessary, assume some of the functions of a central bank. No monetary controls, except for a minimum liquidity ratio, are enforced on the banking system, and there is no government intervention in either the money or capital markets.

Interest Rates in Hong Kong

Interest rates for Hongkong dollars in the call money market, which is largely an interbank market, are closely correlated to Eurodollar interest rates. Since the U.S. is Hong Kong's largest trading partner and, therefore, in the absence of exchange control, rates have to be broadly in line with U.S. dollar rates to prevent excessive capital flows between the U.S. and Hong Kong. This interest rate is a sensitive barometer of domestic economic conditions.

The interest rates for deposits in local currency with local banks are agreed from time to time by the Hong Kong Association of Banks. Market forces are nevertheless the major influences on them. There is also an active market made by the local and

international banks in Eurocurrency call and time deposits. In all cases, interest rates are determined by supply and demand conditions prevailing in the worldwide international currency markets.

Besides call deposits, time deposits, and Eurocurrency deposits, the market for Hong Kong dollar Certificates of Deposits is rapidly expanding; it is now the only sizable market in negotiable money market instruments. Various banks, mostly the Hong Kong branches of foreign banks, have from time to time issued fixed amounts of negotiable floating-rate CDs with maturities of from one to seven years. Recent issues generally bear interest at the prime rate of 1/4 per cent over the 30-day interbank deposit offer rate (known as 'HIBOR') determined monthly with interest payments paid semi-annually in arrears.

Importance of Coordination of Assets and Liabilities in Banks

"Banking is increasingly becoming a risk management business, and the greatest risk lies not simply in the competitive environment for selling loans, but also in the accessibility of funds both for short-term and capital purposes at a cost that gives a reasonable and consistent return on investment."[1]

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[1] "Funding and Capital Management," Magazine of Bank Administration (January 1981):42-50

Assets equal liabilities. This holds true in every bank. But how to match them is another matter. And, if there is any area of banking that will undergo drastic change in Hongkong's commercial banks, it is the whole subject of asset-liability management and the determination of what goals the bank is seeking as it solicits both its assets and its liabilities.

Inflation, recession anxieties, adjustments in monetary and fiscal policies, raw materials shortage, protectionalism as well as constant shock to the economy produced by political and international events make Hong Kong's banking environment very vulnerable to internal and external economic disturbances. As we shall see, the increasing volatility of interest rates in Hong Kong has made the management of commercial banks more challenging and difficult to profitably allocate assets and liabilities to determine their mix and volume levels. Furthermore it is very important for them to match rate-sensitive assets (RSA) and rate-sensitive liabilities (RSL) properly.

Today, high performance depends on adopting a fund management approach that will have consistent success in achieving corporate profit, growth and market penetration objectives, and insuring desired levels for liquidity and capital adequacy. And more particularly, the banks must be able to protect their performance

against unsettled economic cycles and the resulting net interest margin fluctuations. Such an approach is asset/liability management.

CHAPTER II

METHODOLGY

To get the picture of what asset/liability management is, an extensive literature review will be conducted from various sources. Since commercial bank management in the U.S. is believed to be the most sophisticated in the world, I will use their asset/liability management methods as reference for discussion.

The main focus of this research is to see how commercial banks in Hong Kong coordinate their asset portfolios and liability portfolios. A macro-picture is first intended to be analysed through government statistics and privately-conducted research to investigate the interest rate volatility in Hong Kong's financial environment during the past five years and the restructuring of banks' balance sheet position in the same period. This will allow us to observe the general progress of Hong Kong's commercial banks towards asset/liability management.

Personal interviews will be conducted simultaneously in several major commercial banks, namely, The Hongkong & Shanghai Banking Corporation,

Standard Chartered Bank, Citicorp, and Chase Manhattan Bank. Issues that will be covered include their operational goals, present and future direction of bank management, financial instruments and analytical tools that they are using and their attitude to asset/liability management.

Lastly, an attempt will be made to study some initiatives in asset/liability management in Hong Kong's commercial bank management. These include the deliberate mismatch of maturity structures in asset and liability portfolios and the development of various off-balance sheet efforts to hedge interest rate risk exposure.

CHAPTER III

OVERVIEW OF ASSET / LIABILITY MANAGEMENT STRATEGIES

Modern bank management strategies involve control of both the asset portfolio and the liability portfolio. Traditionally banks emphasized management of the asset portfolio, using deposit funds to build a portfolio of assets that was appropriate for the liability portfolio. Beginning in the 1960's, banks became more aggressive and expanded their use of short-term borrowing to support assets. The extended use of liability management led to the development of interest margin management strategies, which allow banks to profit from movements in interest rates. The broader use of liability management techniques, while increasing profit potential, has also increased the risk and complexity in managing banks.

Asset/liability management strategies entail coordinating return and risk characteristics of the bank's portfolio of assets and liabilities. Every investment decision a bank makes requires a simultaneous decision on how to fund the investment. The risk to the bank depends not only on the characteristics of the assets but also on the

characteristics of the liabilities used to fund the assets.

The Simultaneous Nature of Investment Decisions

In modern commercial banks, when individual decisions are examined, it is important to recognize the simultaneous nature of asset and liability decisions. Every fund using or asset employment decision requires a simultaneous funding decision. The risk in the decision is composed of both the risk of the assets and the risk in funding the loans.

To see how the funding decision affects risks, consider two banks that have decided to increase their consumer loans. Consumer loans are generally longer-term loans of small amounts. Assuming that the two banks making the loans apply similar credit standards, the loan will entail similar levels of credit risk. The risk to the bank making the loans will depend not only on the asset risk but also on how the loans are funded.

Bank A decides to fund the loans with core deposits. It plans to use the funds it anticipates from maturing assets and predicted growth in deposits. Core deposits in this example are assumed to be a stable source of funding with a predictable cost. Bank B decides to fund the loans by issuing short-term

certificates of deposits. These two practices are often found in some commercial banks of Hong Kong.

The risk in making the loans is greater for Bank B than for Bank A. Bank B will increase both its interest rate and its liquidity risk. The net yield from making the consumer loans will be affected by changes in market interest rates. If rates rise, the net return on the loans will fall. Of course, If rates decline, the net yield will rise. Since Bank B has funded the longer-term loans with short-term liabilities, it will also incur a greater liquidity risk than Bank A. It will have refinanced the loans by rolling over the CDs as they mature. So, even though the banks have made asset decisions involving similar risks, the risk to the individual bank is not the same because of the selection of different source of funding.

The risks in the assets and liability decisions are interdependent. The funding of assets will affect the risk to the bank. The characteristics of the assets must be considered in terms of their funding. The simultaneous nature of investment decisions is therefore an important aspect of risk evaluation.

In short, to assure profitability and minimize risk, banks must simultaneously manage the maturity, rate and volume characteristics in their portfolio of

assets and liabilities.

Asset / Liability Management and Interest Rate Risk

Asset / liability management aims at maximizing the wealth of bank shareholders while keeping risk at a level acceptable to shareholders. Operationally, asset-liability management reaches this objective by coordinating the functions that affect a bank's interest-bearing assets and liabilities, including liquidity management, investment management, loan management and liability management. These functions need to be coordinated because high and fluctuating interest rates can drastically affect the net interest income earned from interest-bearing instruments, as well as the net value of the instruments.

The greatest pitfall to implementing asset-liability management lies in forecasting risks from alternative programs. Of these risks, interest rate risk is the most difficult to forecast.[2]

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[2] Besides interest rate risk, credit risk and liquidity risk are also important considerations to most bankers. Credit risk is the risk that a decline in the credit rating of borrowers will cause the quality of earning assets to decline. Liquidity risk is the risk that liquidation of assets to meet unexpected cash needs results in a loss.

Interest rate risk has two components. The first, referred to as income risk, is the risk of loss in net interest income from movements in borrowing and lending rates not being perfectly synchronized. The second, called investment risk, is the risk of loss in net worth due to unexpected interest rate changes.[3]

A careful strategy of asset-liability management can reduce both components of risks. To facilitate control of the interest rate risk, measures have been developed to gauge a bank's exposure to interest rate risk. The two most popular measures are "gap" and "duration gap".

Gap Management

Gap management is used to insulate net interest income from income risk. This technique uses gap to measure the exposure of net interest income to fluctuations in interest rate. Gap is defined in terms of rate-sensitive assets (RSA) and rate-sensitive liabilities (RSL), which are assets and liabilities that either mature or are repriced within the planning horizon used in asset-liability management, usually one year.

There are three gap management options available to banks. First they may maintain a ratio which tends

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[3] Net worth is the differences in the market value of assets and nonequity liabilities.

to be assets sensitive or greater than 1.00. Second, banks may hold a balanced position by allowing a position of their rate-sensitive assets to be supported by an equal amount of rate-sensitive (purchased) funds (RSA/RSL = 1.00). In the case of this option, the assumption is that the rate spread and therefore operating earnings will exhibit the least amount of variability. This option might seem especially attractive in a time of frequent and substantial swings in rates, such as that which has existed in Hong Kong for the past five years. But it must be recognized that there is no perfect hedge here because assets, e.g. prime rate loans, are generally less immediately sensitive to rate changes than liabilities such as HK$1,000,000 CDs. That is, their respective rate levels do not always move in tandem because there is often a lag problem after turning points in rates. Furthermore, there are also volume shifts at different phases of the rate cycle, e.g., negotiable certificates of deposits outstanding may be 10 per cent when market rates are around 12 per cent but a much smaller percentage of liabilities when rates drop. In fact, there are highly competitive market pressures at work on both sides of the interest differential equation at all phases of the rate cycle, possibly making the margin contribution of the second option less substantial and controllable than that of the asset-sensitive position. Moreover, a balanced

position may mean a loss of market share on the loan side, for it may entail turning away fixed-rate borrowers in order to maintain the equality between RSA and RSL. The third option is allowing RSL to exceed RSA. The rationale here is that short-term instruments normally have lower interest rates than longer term ones.

Generally, high-performance banks tend to be potentially balanced. But most often they are off-balance and asset-sensitive according to interest rate trends. Of course, the greater the volatility and interest rate risk, the stronger the inclination to hold a balanced position. The main concern is to have sufficient flexibility on the asset side of the balance sheet to keep pace with the rapid changes in the cost of funds.

The standard strategy is to widen the gap when rates are expected to rise and to narrow it when rates are falling. This will maximize banks' earnings and take advantages of correct interest rates expectations. However, an excessively wide gap at high-rate phases will result in reduced earnings during a subsequent lower phase, if the bank is unable to narrow the gap in time. Henceforth, it is advised that gap management strategies should be oriented toward optimizing gap relationships through a complete rate cycle and not

maximizing at any one phase.

Yet, a serious criticism of gap management states that it helps banks to insulate themselves from the income risk component of interest rate risk but not from the investment risk component. This is because gap management focuses on net interest income but ignores net worth. Even if it can be used to stabilize net interest income, interest rate fluctuations will affect the market values of assets and liabilities that are not rate-sensitive, increasing the volatility of net worth, and therefore, risk to shareholders. This raises the issue of Duration Gap Management.

Duration Gap Management

Duration gap management is used to insulate net worth from investment risk. This technique uses duration to measure the exposure of net worth to interest rate fluctuations. The duration of a financial instrument is similar to its term to maturity, both being a measure of time (See Appendix 1).

Duration is useful to bankers because it can be used to calculate the interest sensitivity of a bank's net worth. Since the effect of unexpected interest rate changes on financial instrument prices is related to duration, the effect of unexpected interest rate changes on net worth is related to the durations of the assets and liabilities held by the bank. If the

durations of the assets and liabilities are approximately equal, an unexpected interest rate increase reduces the market value of assets and liabilities by about the same amount and leaves net worth essentially unchanged; and vice versa. Hence, net worth is insensitive to unexpected rate changes on such case.

The major criticism of duration gap management is the difficulty of its implementation. Detailed information on maturity dates, interest rates, and payment schedules is required for all of a bank's instruments. And additional information and computations are necessary if an instrument, such as a mortgage, can be prepaid, or if an instrument,such as a variable-rate loan, can be repriced. Furthermore, there is no agreement on how to compute the durations of deposits that can be withdrawn with little or no notice. Such considerations appear to make the application of duration analysis infeasible for all but fairly large banks.

Gap or Duration Gap: Which One?

A bank that maintains a zero gap may have a nonzero duration gap while another that maintains a zero duration gap may have a non-zero gap. The strategic choice will partly depends on the preferences of the bank's stockholders. If they prefer a steady

income, emphasis will be placed more on controlling income risks (Such an attitude is usually found in banks that are owned privately by a few long-term stockholders). In contrast, if the bank's shares are widely traded and ownership is dispersed among a large number of short-term stockholders, stockholders may prefer a management strategy that maintains the value of their shares, thus putting more emphasis on controlling the investment risk.

CHAPTER IV

SITUATION ANALYSIS OF HONG KONG COMMERCIAL BANKS

While the Hong Kong dollar is made pegged to the US dollar in 1983, the whole banking community in Hong Kong becomes much more interest-sensitive than before.

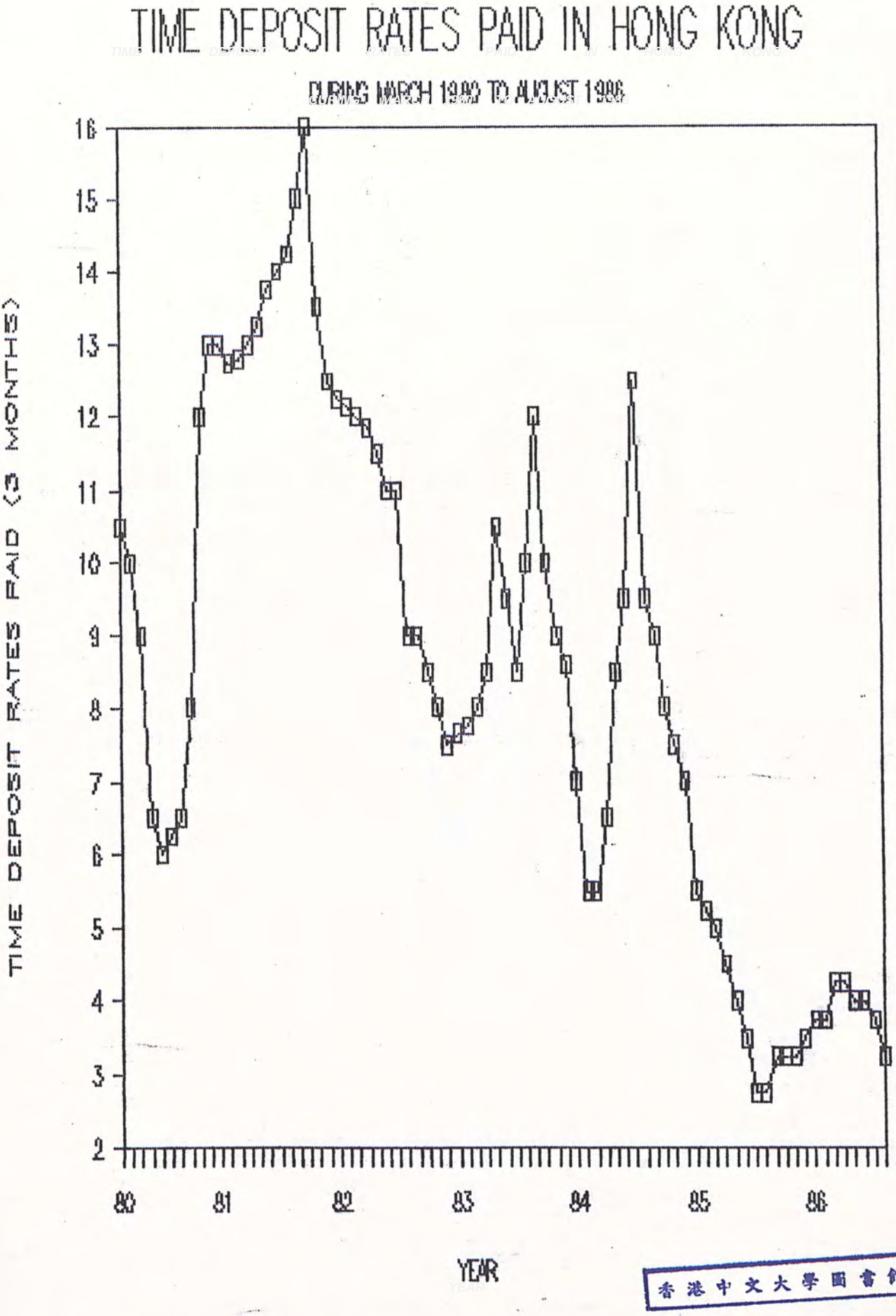
Interest Rate Volatility

As shown in Illustration 1 to Illustration 4, the Hong Kong Dollar Inter-bank Offer Rate (% per annum), the Time Deposits Rates Paid, the Savings Deposits Rates Paid and the HSBC's Quoted Best Lending Rates were all undergoing significant fluctuations in the past five to seven years. The volatility and range of these interest rate changes create potentially substantial risk and affect interest margin and profits in most commercial banks of Hong Kong.

Distribution of Assets

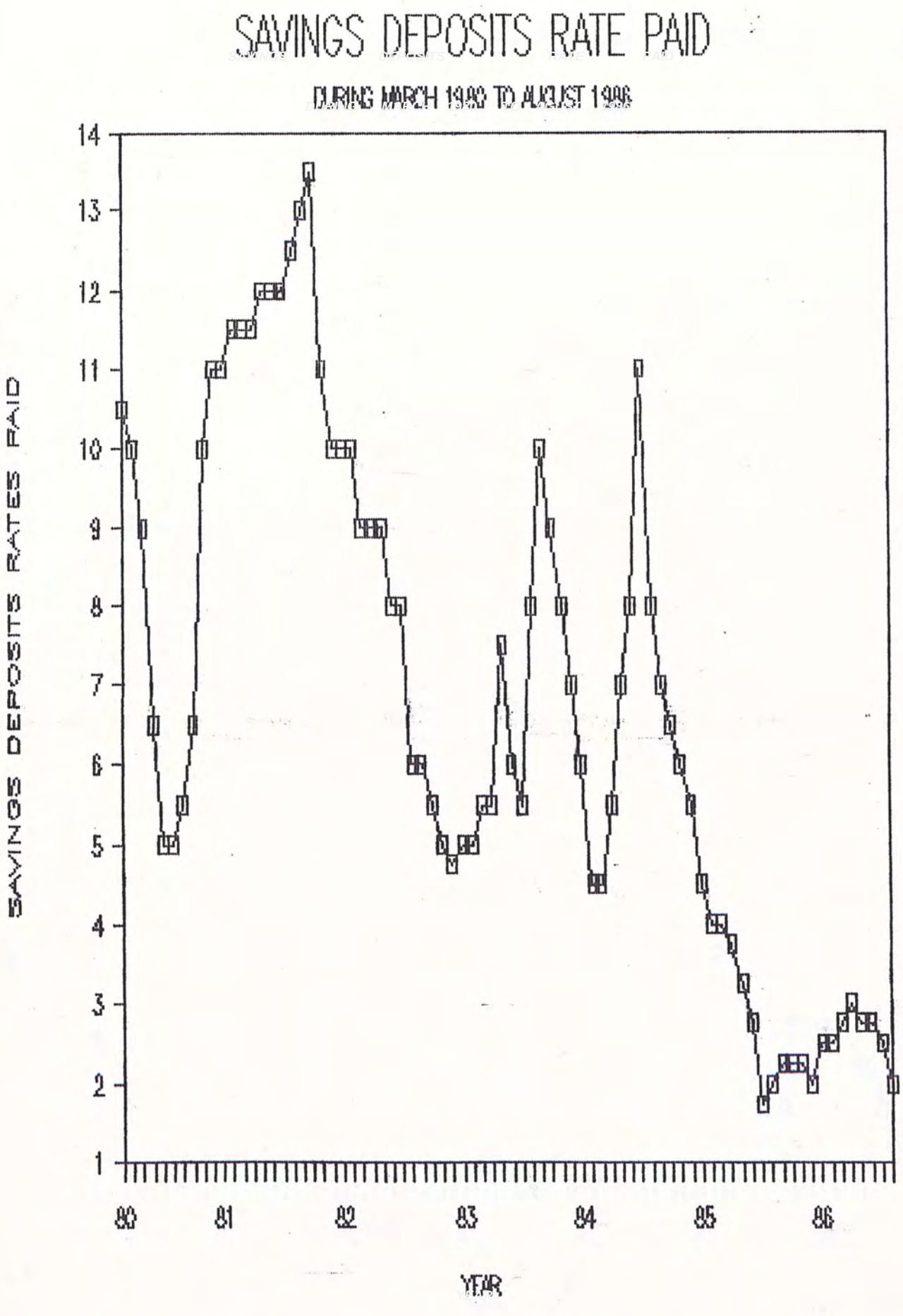
As shown in Table 1 and Table 2, the asset structure in the Hong Kong's commercial banking industry is gradually shifting its dependence on the dynamics of the international financial markets. The Amount due from Banks Abroad had increased from 26.7

ILLUSTRATION 1



Source : H.K. Monthly Digest of Statistics, various issues.

ILLUSTRATION 2

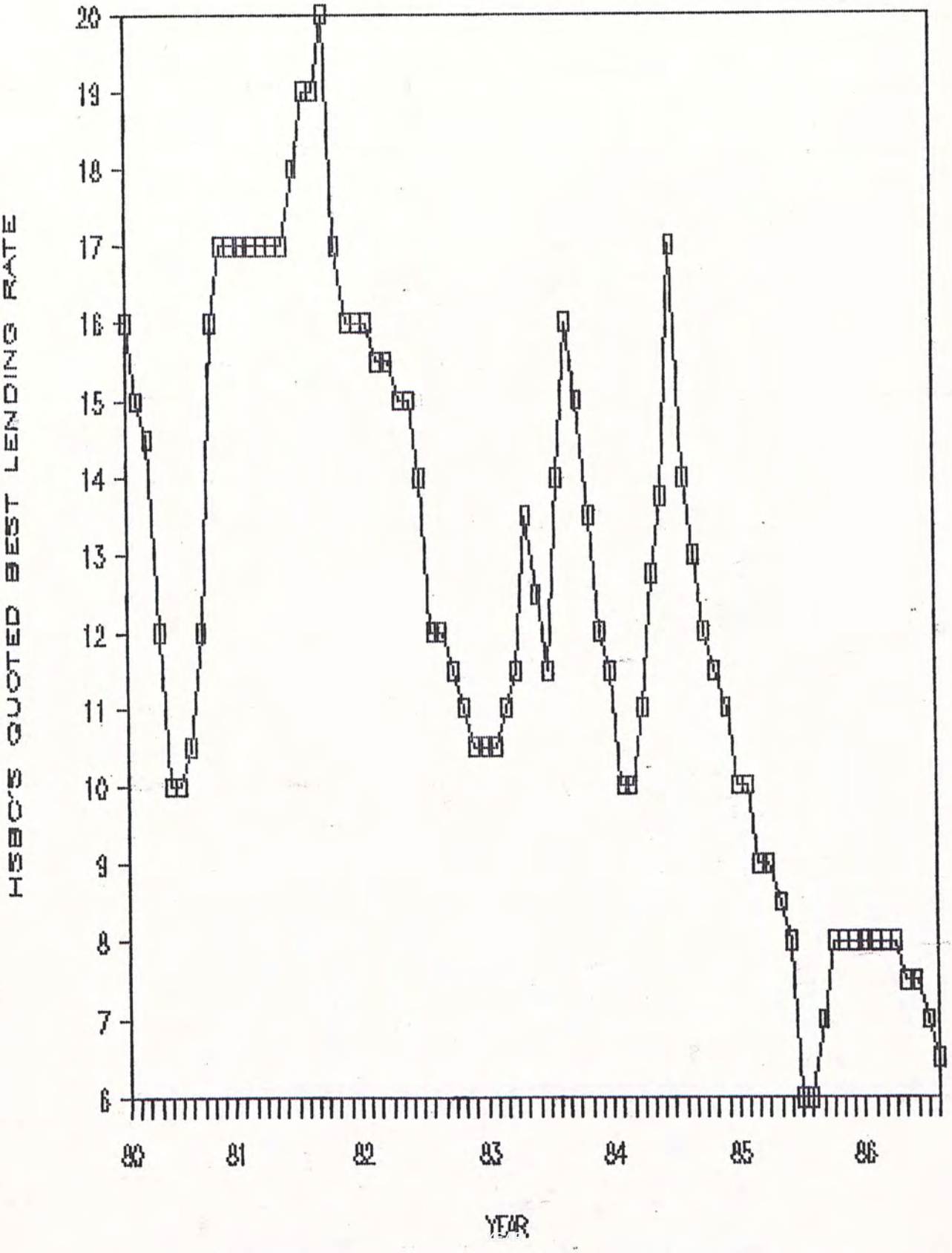


Source : H.K. Monthly Digest of Statistics, various issues .

ILLUSTRATION 3

THE HSBC'S QUOTED BEST LENDING RATES

DURING MARCH 1980 TO AUGUST 1986

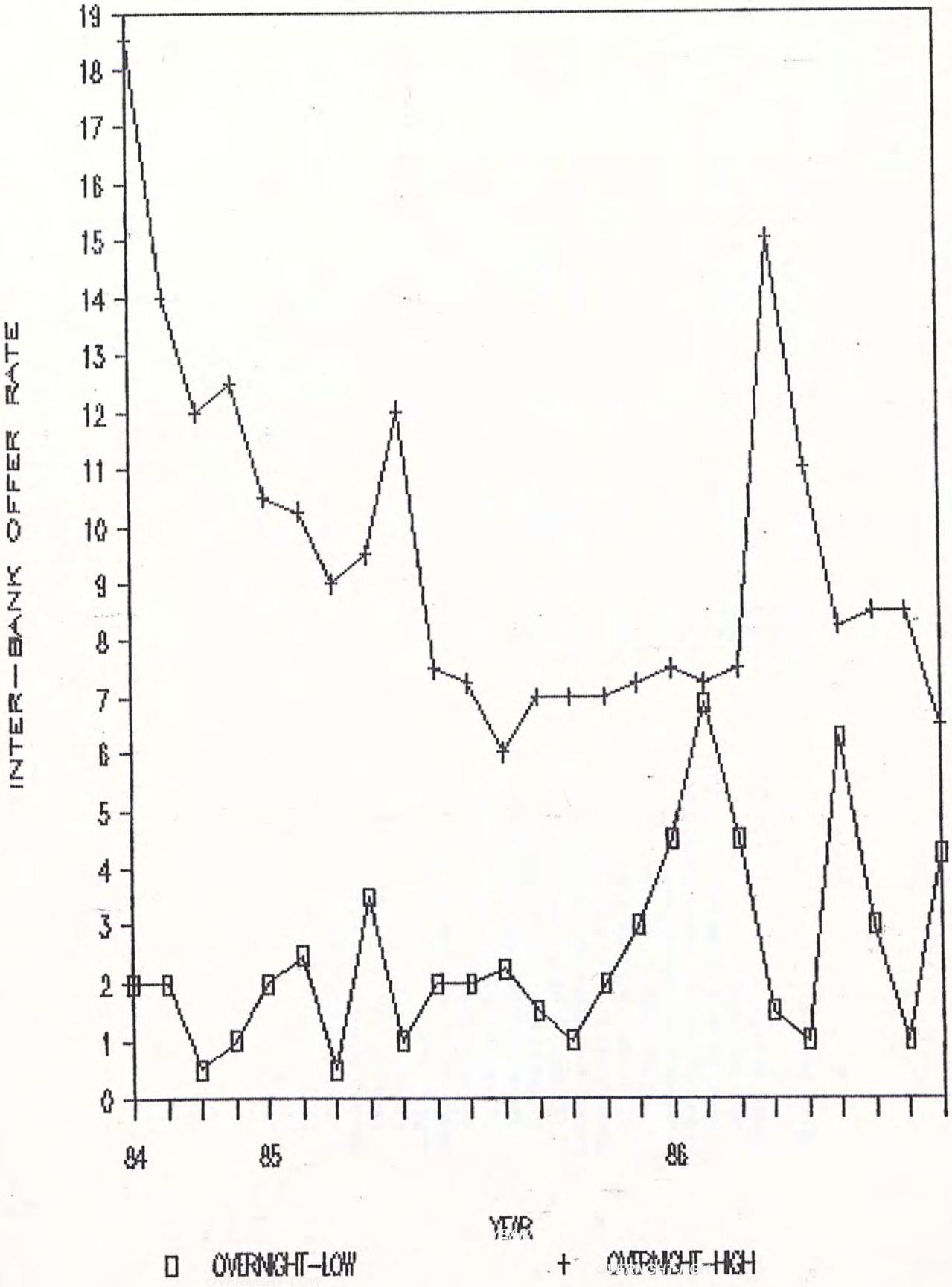


Source : Monthly Digest of Statistics, various issues.

ILLUSTRATION 4

THE HK DOLLAR INTER-BANK OFFER RATES

DURING SEPT. 1984 TO SEPT. 1986



Source : H.K. Monthly Digest of Statistics, various issues.

TABLE 1

Distribution of Assets
in million dollars

	Dec 1980	Dec 1981	Dec 1982	Dec 1983	Dec 1984	Dec 1985	Dec 1986
Hong Kong Notes and Coins	2892	2473	2474	2621	2348	2594	2881
Amount due from banks and deposit-taking companies in Hong Kong	47617	74474	116473	165135	195323	225434	290885
Amount due from banks abroad	78366	118659	195644	271588	328826	443963	654339
Negotiable certificate of deposit held							
Issued by banks in Hong Kong	193	756	1749	2457	3018	3794	7114
Issued by deposit-taking companies in Hong Kong	42	155	88	149	274	789	770
Issued by banks outside Hong Kong	3871	5754	3624	6358	8898	8711	10458
Loans and Advances to Customers	124535	161799	208702	255165	286277	312942	378276
Bank acceptances and bank bills of exchange held	5743	9991	9557	10528	10160	10812	13831
Floating rate notes and commercial paper held	1766	4414	5137	7389	12048	24314	31687
Treasury bills, securities, share-holding and interests in land and building	7425	8686	11199	12956	15552	28355	33658
Other Assets	23329	27187	41842	54469	41676	40113	53429
Total Assets	294979	414348	596589	788627	903568	1101021	1485160

Source : H.K. Monthly Digest of Statistics, various issues.

TABLE 2

Distribution of Assets %

	Dec 1980	Dec 1981	Dec 1982	Dec 1983	Dec 1984	Dec 1985	Dec 1986
Hong Kong Notes and Coins	0.7	0.6	0.4	0.3	0.26	0.24	0.19
Amount due from banks and deposit-taking companies in Hong Kong	16	18	19.5	20.9	21.6	26.5	28.1
Amount due from banks abroad	26.7	28.6	32.8	34.4	36.4	40.3	44.1
Negotiable certificate of deposit held							
Issued by banks in Hong Kong	0.87	0.18	0.29	0.3	0.33	0.34	0.48
Issued by deposit-taking companies in Hong Kong	0.01	0.04	0.01	0.02	0.03	0.07	0.05
Issued by banks outside Hong Kong	1.31	1.39	0.6	0.8	0.9	0.8	0.7
Loans and Advances to Customers	42.3	39.05	35	32.52	31.71	28.45	25.48
Bank acceptances and bank bills of exchange held	1.91	2.41	1.6	1.33	1.12	0.9	0.9
Floating rate notes and commercial paper held	0.6	1.07	0.9	0.93	1.33	2.2	2.1
Treasury bills, securities, share-holding and interests in land and building	2.5	2.1	1.9	1.6	1.72	2.6	2.3
Other Assets	7.9	6.56	7	6.9	4.6	3.6	3.6
Total Assets	100	100	100	100	100	100	100

Source : H.K. Monthly Digest of Statistics, various issues.

per cent of total assets in Hong Kong's commercial banks to 44.1 per cent. On the other hand, Loans and Advances to Customers had dropped from 42.3 per cent to 25.5 per cent.

This evidence might show that the commercial banks in Hong Kong in general are restructuring themselves to avoid sole dependence on the local economy. They are diversifying their operations in a global perspective. While the world economy is tending to be more volatile in the past decades, the earnings in these banks are inevitably facing fluctuations in the same period.

Distribution of Liabilities

During 1980 to 1986, though the distribution of the liabilities in Hong Kong's commercial banks seemed to remain unaltered, the Amount due to Banks Abroad had increased 6.2 per cent in this period (shown in Table 3 and 4). This might indicate that the banks in Hong Kong are increasing their reliance of attracting funds from international financial markets. The potential volatility of cost of funds is thus tending to be more significant in Hong Kong's banking environment in the near future.

TABLE 3

Distribution of Liabilities
million $

	Dec 1980	Dec 1981	Dec 1982	Dec 1983	Dec 1984	Dec 1985	Dec 1986
Amount due to banks and deposit-taking companies in Hong Kong	55760	80248	97712	131736	161482	183996	246102
Amount due to banks abroad	110067	170223	233054	323875	373001	464163	686485
Deposit from customers	86753	104457	198259	239074	296103	367224	452538
Negotiable certificates of deposit outstanding	2041	4895	9929	11366	11682	14240	20342
Other liabilities	32358	46613	65833	81774	61380	71398	79693
Total liabilities	294979	414346	606587	788625	903568	1101021	1485160

source : H.K. Monthly Digest of Statistics, various issues.

TABLE 4

Distribution of Liabilities %

	Dec 1980	Dec 1981	Dec 1982	Dec 1983	Dec 1984	Dec 1985	Dec 1986
Amount due to banks and deposit-taking companies in Hong Kong	18.9	21.3	16.4	16.7	17.9	16.7	16.6
Amount due to banks abroad	40	41.1	39	41.1	41.3	42.2	46.2
Deposit from customers	29.4	25.2	31.9	30.4	32.8	33.4	30.5
Negotiable certificates of deposit outstanding	0.7	1.2	1.7	1.4	1.3	1.3	1.4
Other liabilities	11	11.2	11	10.4	6.7	6.4	5.3
Total liabilities	100	100	100	100	100	100	100

Source : H.K. Monthly Digest of Statistics, various issues.

CHAPTER V

INVESTIGATION OF COORDINATION OF ASSETS AND LIABILITIES IN HONG KONG'S COMMERCIAL BANKS

So much for sophisticated assets and liabilities management as practised in the United States. In Hong Kong, the financial and investment environment is specific in its own right, especially at this particular time when the gradual transition of sovereignty to China is progressing, and the coordination of assets and liabilities could be very different from that in U.S.

Following the earlier experience with 'liabilities' management in North America, the emphasis of banking management in Hong Kong tends to be at first on the liabilities side of the balance sheet and is rather in the nature of 'funds mangement'. Though as term lending becomes increasingly common, there is also a change in structure on the asset side. But basically what bankers in Hong Kong are looking for is an adjustment at the margin[4] on the liabilities side, which would accommodate mainly quantitative changes on the asset side. If there is an increasing demand for

loans to be met, more funds would have to be sought. If there are funds in excess of immediate lending requirements, management would require that funds be absorbed elsewhere, often by way of short-term investments in the money market, or in a money-market type instruments, so that funds could again be made available (e.g. by sale in a secondary market) if and when loan demand picks up. An alternative that can still be employed is to treat the investment or securities portfolio as a residual, used as necessary to absorb such funds as are not required for lending purposes.

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[4] Adjustments of margin can be made in a number of different ways and employ several different kinds of instruments; sometimes, a combination of instruments. The most important included the resort to an inter-bank market, the issue of CD's, the attraction of large deposits, the resort to bill markets or to Eurocurrency markets, and also swaps.

Coordination of Assets and Liabilities in Hong Kong's Domestic Banks

Basically, commercial banks in Hong Kong can be divided into two groups : Domestic and Foreign banks [5]. Among domestic banks, The HongKong and Shanghai Banking Corporation (HSBC) and Standard Chartered Bank (SCB) have almost 80 per cent of the local deposit market, with the foreigners and local Chinese-capital banks taking up the rest. As the market leaders in Hong Kong's banking industry, both are adopting a fund management approach to coordinate their assets and liabilities.

Having a common basic strategic objective to balance the return-risk tradeoff in order to maximize the value of the bank for its shareholders, the HSBC and the SCB emphasize the control of cost of funds. Other things being equal, it will have higher returns if the cost of funds is lower without taking significantly higher risks. Furthermore, the types of sources of funds they obtain and how these sources of funds are employed have a significant impact on the liquidity risk, the interest rate risk, and the capital risks in the banks.

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[5] Since a large number of local Chinese banks have been acquired by foreign banks or holding companies with controlling or minority equity interests, this classification of banks has becomes less clear.

The treasury departments of both banks are responsible for the coordination of fund uses and fund sources. In other words, they have anticipated the asset/liability mix in affecting the banks' earnings. They provide guidelines to the operating departments for either pricing loans or attracting deposits with respect to Marginal Funding Cost.

A basic shift in liability strategy will have an immediate impact on earnings. When interest rates are anticipated to rise, a shift toward longer maturity liabilities is preferred. Conversely, when interest rates are expected to decline, a shift toward shorter maturities is desirable. This strategy is currently employed in both banks because of the maturity characteristics of assets versus liabilities. (It is impractical to go into consumer loans and leasing today and get out tomorrow just because the forecasts of interest rates have changed.)

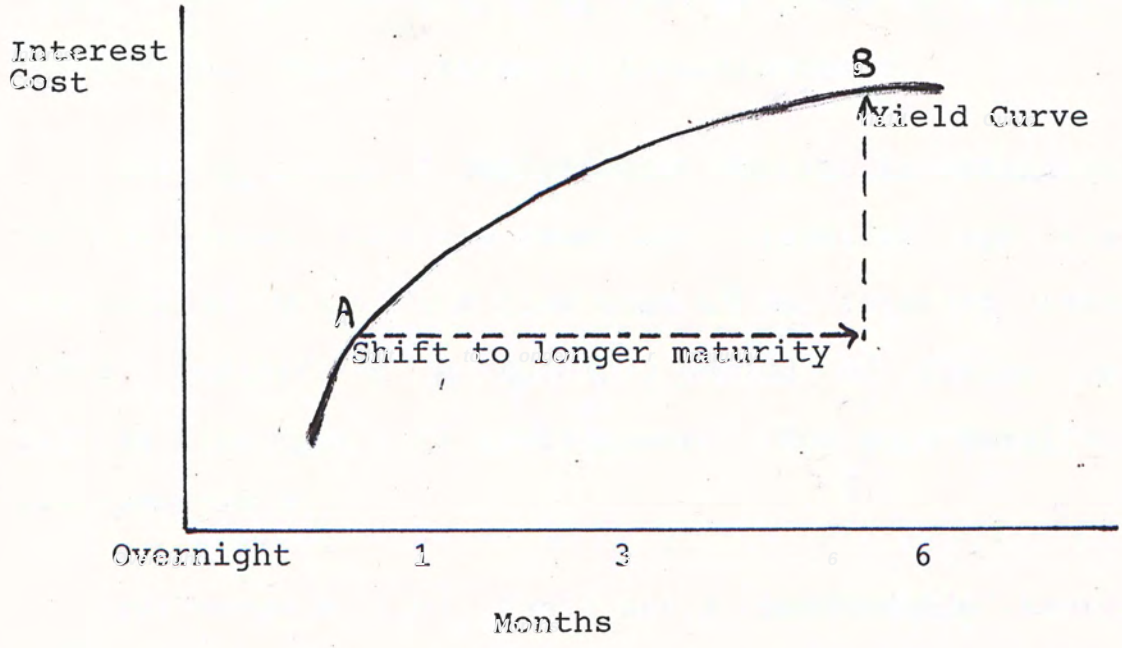
Illustration 5 shows a typical yield curve when interest rates are expected to rise. Point A on the curve shows the marginal funding cost if the basic strategy has been to fund in the short maturity range. A decision to purchase longer maturity liabilities has the effect to move up the yield curve and the marginal funding cost increases to point B. This basic shift results in an immediate, unfavorable impact on earnings.

ILLUSTRATION 5

YIELD CURVE IN A RISING INTEREST RATES ENVIRONMENT

Expected Environment : Rising Interest Rates

Strategy : Shift from short to longer maturity



Short-term earnings impact : Unfavorable

Expected longer-term impact : Favorable

However, if the strategy change is a correct one, over time the total effect is favorable as the cost of longer maturity liabilities still remains relatively fixed when the interest rate rises.

Similarly, when interest rates are expected to fall, the basic shift in liability strategy from funding long to funding short results in higher costs immediately. Again, if the strategy is correct, over time the total effect is favorable, as shorter-maturity liabilities are replaced with cheaper funds as interest rates drop. This is shown in Illustration 6.

This dynamics of funding cost control is effective in the sense that the asset and liability mix are coordinated within the time span of an interest rate cycle, instead of a specific period of rising or falling interest rate environment. (For more details, see Appendix 2.)

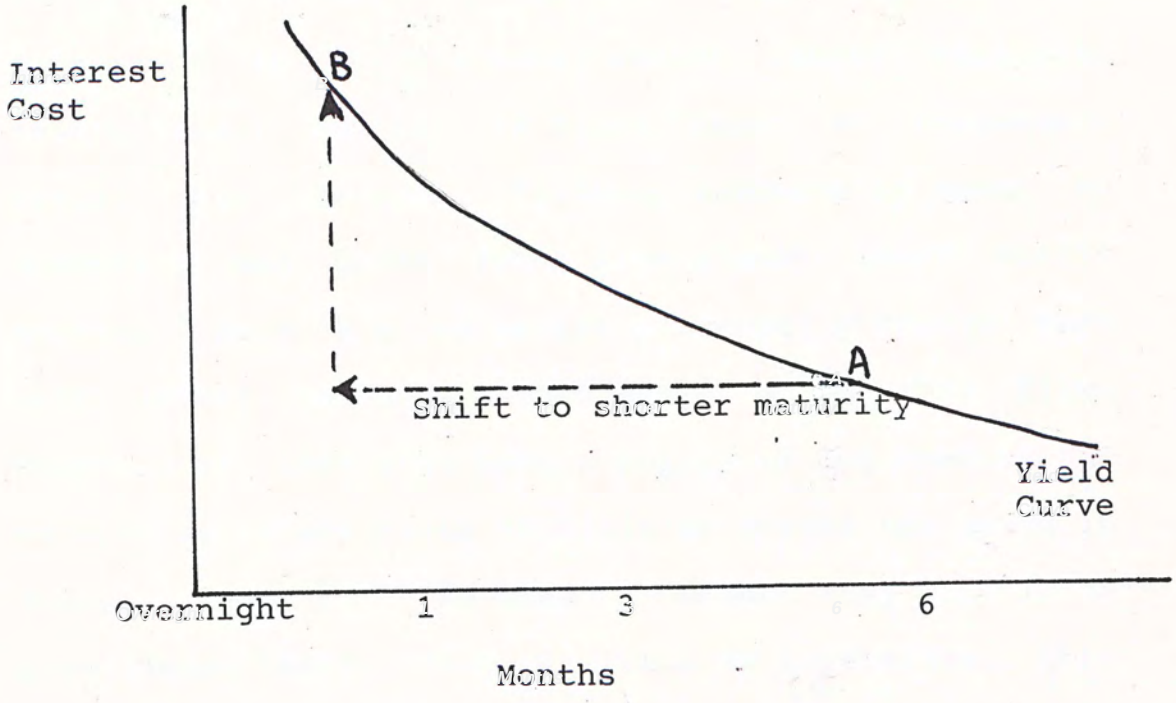
Furthermore both banks see a predictable trend towards machine banking and are investing heavily in developing retail products built around machines. The products are being increasingly aimed at the personal lending market and at satisfying the individual's cash management needs. As the use of new technology delivery system such as ATMs and POS terminals helps control personnel costs and banks price their transaction services more rationally and completely, the retail banking arms in both banks may provide deposit funds

ILLUSTRATION 6

YIELD CURVE IN A FALLING INTEREST RATES ENVIRONMENT

Expected Environment : Falling Interest Rates

Strategy : Shift from long to shorter maturity



Short-term earnings impact : Unfavorable

Expected longer-term earnings impact : Favorable

without an undue net cost burden.

Coordination of Assets and Liabilities in U.S. Money-Center Banks

The U.S. Money-Center banks in Hong Kong have their strategic objective on how to maximize earnings while managing the risks. Because their money operations are global in scope, they have a policy to diversify all sources of funds along currency, country, investors and maturity lines. This ensures that conditions in any one money market cannot seriously impact their ability to raise funds at reasonable rates. For instance, Citicorp operates in about 90 countries and draws funds from almost every market source. Such a broad market presence provides them with access to funds regardless of where they flow. Furthermore they also have a policy of lengthening the maturities of all their liabilities across the board in every market. With the kind of volumes they take in on a worldwide basis, they view this as imperative. This objective provides a strong incentive to develop new marketing techniques or new liability instruments, or both.[6]

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[6] "Citifunds" is one example. For a minimum deposit of US$30,000 or HK$200,000, several investment choices are offered. These included a call deposit available in Hong Kong dollars, US dollars or Japanese Yen; one-, two-, and three-month time deposits in Hong Kong and US dollars held in a variety of locations; and pooled funds (unit trusts) invested in internationally diversified portfolios of company shares.

On the other hand, to ensure adequate liquidity, these money-center banks think that it is important to avoid undue concentration of maturities and to monitor closely their market share. Their basic funding principles are to control the amount of funds that must be raised on any given day by currency, by country, from any one source, and for the institution as a whole.

Based upon these funding principles, the large U.S. banks have formulated certain common broad corporate policies which are illustrated as follows :

(1) Assets are funded to the maximum extent possible with liabilities in the same currency. This reduces foreign exchange exposure risk.

(2) Maintaining an active presence in as many money markets as possible.

(3) Lengthening the maturities of liabilities. This reduces the amount of fund needed to be raised on any given day in any market.

(4) Hedging the risk exposure where possible.

(5) Add to capital through long-term debt. This strengthens the corporations' capital position.

Very often asset/liability management committees are found in those U.S. money-center banks in Hong Kong. This committee, under the supervision of the Treasury, helps to structure the entire balance sheet of their banks and anticipates the determining factors

of their net interest margins - rate sensitivity, asset pricing and funding costs. They also forecast noncontrollable factors such as loan and core deposit volumes and plan controllable factors, especially the investment portfolio size and mix and purchased funds volume.

Though the money-center banks are operated in a global perspective, they have a decentralized treasury operation in Hong Kong (and other countries as well) which aims to diversify risk by reducing the impact any one decision could have on corporate earnings or liquidity. They believe that it is highly unlikely that all treasurers will be on the same side of any market at a particular point of time. This reduces the chance of significant problems resulting from unanticipated market changes.

Yet, on top of this decentralized treasury structure is a centralized system of monitoring and control. This system is designed to ensure compliance with the corporate policies and limits established to maintain adequate worldwide liquidity. At the head office, they set limits that concern the degree of acceptable liquidity risks or mismatch of asset and liabilities maturities, the degree to which assets in one currency may be funded with liabilities in another, or the degree of allowable foreign exchange risk, and

the extent of allowable dependence on any one market source.

Coordination of Assets and Liabilities in Other Banks

The remaining banks under discussion are those Chinese-capital banks and The Bank of China related banks. It is generally believed that the management of these banks are still very traditional and conservative. Except for The Bank of China, who seems to have great potential, all these smaller banks incorporated liquidity into asset portfolios which were constructed so that the outflow of funds could be satisfied by liquidating assets without any adjustment in liabilities. The investment in assets is constrained by the ability to transform the asset into usable funds.

This process of securing liquidity through asset construction has its costs. Traditionally loans yield the highest return but are the least liquid of interest-bearing assets. To assure liquidity, these banks might put deposits in larger banks at a lower earning rate, thus foregoing profitability.

Furthermore, with limited size, scope of operation and market share, the Chinese-capital banks and BOC-related banks are currently adopting a survival strategy - operating with minimum risk and lowest costs. Lacking the expertise to anticipate interest

rate changes or to coordinate asset and liability structures, these banks are unlikely to adopt a more sophisticated management in the near future.

CHAPTER VI

NEW INITIATIVES ON ASSET/LIABILITY MANAGEMENT

Today, successful management of asset/liability risks and returns depends on working with four basic options: high asset growth (volume), increases in the yields and percentages of earning assets, attempts to selectively mismatch maturities, and accelerated development of noninterest revenues.

The first two options are constrained. Higher asset growth will put additional pressure on capital, could drive down loan quality and may not be possible in mature markets (particular in the limited market size of Hong Kong). Increasing the yields and the percentages of earnings have definite limits due to the interest cartel policy in Hong Kong. Controlled mismatching and developing noninterest revenues, however, show considerable promise.

Deliberate Mismatching of Assets and Liabilities

While avoiding interest rate risk is desirable, as revealed in gap management and duration gap management, it cannot be the sole consideration in determining an overall risk position. An unwillingness to accept some

rate risk through modest maturity mismatches could lead to increased credit risk. For example, a bank might be persuaded to book less creditworthy, high-risk/higher return deals, such as certain construction loans, to compensate for the opportunity cost of a balanced position, or if a bank has priced a loan on a variable-rate basis to avoid market rate risk, and interest rates increases sharply as they have in the past, say from 12 percent to 18 percent, the borrower's ability to pay may be adversely affected. In both of these cases, the bank has inadvertently traded interest rate risk for credit risk. Market share and capital generation risks are also part of the composite risk.

Furthermore, many banks recognize that there is no perfectly hedged or balanced position even if they did wish to eliminate interest rate risk through gap management strategies. Rate levels for assets and liabilities do not always move in tandem or to the same degree. Moreover, there is a hidden bias toward asset sensitivity in a declining interest rate environment. This is due to the ability of borrowers to prepay or renegotiate loans. Loan levels therefore decline faster than sensitivity measures suggest.

Yet, deliberate mismatching will continue to be resisted by small banks because of their more limited freedom to choose assets and liabilities. They may well prefer to restructure the mix and pricing of

assets and liabilities to achieve balance. This is common in the Hong Kong banking environment because many banks (mostly the domestic small banks) still enjoy lower funds costs and a potential for wide spreads. But as inflationary pressures and intensifying competition for deposits bid up funding costs (which is presently happening), the advantages will decline and the mismatching approach may become more necessary.

What degree of mismatch is most appropriate? It varies with a bank's portfolio, depending on the lead time necessary for implementation of "gap", the various means available for adjusting gaps when they are unfavorable, and finally, the expectation of interest rates.

Basically, in a rising-rate environment, banks may decide to maintain a ratio which, for short times, tends to be asset-sensitive. Such a mismatch might consist of an excess of flexible-rate loans, cash flows from loans and investments, short-term investments and purchased certificates of deposit. Conversely, in a declining rate environment, banks may decide to be negatively mismatched, at an RSA/RSL ratio of less than 1.00, being careful not to rely too heavily on short-term/investment securities.

The banks best able to mismatch maturities

deliberately and to take advantage of the yield curve are those that have broadened their planning horizon. They have systematically set in place the longer lead-time initiatives necessary to restructure balance sheet pricing and mix so that they can create positions in the specialty loan and deposit markets. These banks focus their efforts on determining basic business strategy, on establishing a strong basis for high performance in the future and on maintaining control of interest sensitivity and net interest margin over the two-to -five year range. In this way, they provide themselves with escape valves for adding or reducing assets and liabilities when mismatches are intolerable or margins have narrowed to the point of potential loss.

These strategic initiatives can serve as a basis for short-term, discretionary changes in rate-sensitivity, cash flows and liquidity. While loan portfolios are still largely nondiscretionary, essentially reflecting the demands of the borrower and overall economic influences, banks are attempting to gain greater control of interest rate risk.

Some principle strategies are the following:

1. Growth and dominance in special market segments (this is being employed by many domestic banks in Hong Kong who are specializing on servicing the garment and manufacturing industries).

2. Acquisition of rate-sensitive assets (through "roll-overs" or new contracts) in resalable lots, not all at one time during the rate cycle, but spread out over several months.
3. Creating a complete spectrum of flexible-rate assets for all categories of borrowings so that actual costs can be adequately reflected in prices, though such arrangements will depend on evolving consumer acceptance.
4. Making use of the futures market to hedge interest rate risk exposure (this will be explored more in details in a later section).
5. Making greater use of money market investments (its influence has been increasing in Hong Kong's commercial banking industry).
6. Increasing the ability to move credit-based business on and off the balance sheet through originations, participations, leasing, money market loans and the discretionary sale of issued loans.

Developing Non-Interest Revenue/Off-Balance-Sheet Arrangements

Off-balance-sheet arrangements in the banking industry of Hong Kong have been increasing drastically in the past few years. Basically, these arrangements may be divided into two general categories:

(1) Lending - Related

-standby letters of credit
-loan commitments
-financial guarantees
-originations
-participations

(2) Investment - Related
-interest rate swaps
-futures / forward contracts
-options
-foreign exchange operations

With diversification into non-interest revenue earning activities, commercial banks in Hong Kong are able to earn a desired profit regardless of how the interest rate changes, thereby reducing the exposure to interest rate risk.[7]

Most large commercial banks in Hong Kong are participating in all of these off-balance sheet activities, though in different degrees of operation and management focus. Originations and participations are increasing their share of profits in many banks due to the intimate relationship between Hong Kong and China. Many fund-raising activities for national projects in China are arranged by the banks in Hong Kong who have connections with international financial markets, for instance, the Eurocurrency and Eurobond markets.

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[7] Interest rate risk, vis-a-vis profitability, can also be hedged in the aggregate in some traditional fashion through loan protfolio diversification and employment of the investment portfolio as a counterbalance.

Of the investment-related activities, swaps and futures are especially important for commercial banks to hedge the interest rate risk inherent in the imbalance between the asset portfolio and the liability portfolio.

Interest Rate Swaps

In its simplest form, an interest rate swap is a transaction that involves two parties exchanging their interest payment obligations on two different kinds of debt instruments, one bearing a fixed interest rate and the other a floating interest rate. This arrangement allows each party to borrow with the preferred type of interest obligation usually at a lower overall cost of financing that each type could obtain on its own. Swaps are made possible because one party has a "comparative advantage" in either borrowing at fixed rate or at a floating rate.

Suppose there are two banks, Bank A and Bank B. Both banks have a mismatch in the maturity structures of their asset portfolios and liability portfolios. Bank A's balance sheet shows a positive gap (or duration gap), i.e. rate-sensitive assets exceed rate-sensitive libilities. If the market interest rate rises, Bank B will incur a loss because its cost of financing run faster than the interest revenue earned from its assets. The same event also happens when the interest rate falls, except in different directions for

both banks.

To reduce the "gap" and thus the exposure to interest rate risk, a swap agreement can be arranged between Bank A and Bank B. With A paying a desired amount of interest obligations of Bank B's 'floating rate' debt, while Bank B pays the equivalent amount of the interest obligation of Bank A's 'fixed rate' debt, both banks are then able to minimize the exposure to interest loss in case of unexpected interest changes.

Such an arrangement need not be exercised only between domestic banks in Hong Kong, it can be made possible between a commercial bank in Hong Kong and a financial institution in other countries as well.

Interest Rate Futures

Though Hong Kong's financial market still has no interest rate future market, hedging through futures in Hong Kong's commercial banks can also be found frequently - mostly in the large international banks. Because Hong Kong's interest rate follows closely with that in the U.S., the U.S. interest rate future markets can be employed in Hong Kong, among other purposes, as a general hedge against the interest rate exposure associated with undesired mismatches in interest-sensitive assets and liabilities.

Long positions in contracts can be used in a

period of falling interest rates as a hedge against funding interest-sensitive assets with fixed rate sources of funds; short positions in contracts can be used at a time of rising interest rates as a hedge against funding fixed rate assets with interest-sensitive liabilities.

However, there are certain pitfalls about futures hedging. First of all, a bank may have already built in a hedge by maintaining a balanced position. A second factor is that the futures market is generally more volatile than the cash market. Therefore there is a distinct possibility that the cash price for particular type of instrument will not move in exact tandem with its future counterpart. This disparity, called basis risk, may mean the elimination of rate protection and cause a financial loss from the hedge.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

Changes in market interest rates cause changes in earnings and real net worth. Modern decision support technology make it possible to quantify in advance, within limits subject to certain assumptions, the changes in earnings and market value which would result from changing interest rates.

The objective of asset/liability management should be to maximize both earnings and real net worth over an identified period of time. Properly approached, the process of A/L management includes :

(1) Measuring embedded interest rate risk and the interest rate risk/return characteristics of alternative balance sheet mix-maturity pricing strategies tested against multiple scenarios for rates.

(2) Communicating all of these measurements in ways that will facilitate and support the decision-making processes.

(3) Managing assets and liabilities for the purpose of creating and maintaining targeted levels of earnings and real net worth.

As only a few foreign money-center banks in Hong

Kong adopt an asset/liability management approach to coordinate the mix and maturities of its bank's assets and liabilities, most commercial banks in Hong Kong are still concentrating on ways of matching specific funds sources with selected uses. Though some of the larger banks have shifted the emphasis toward "liability management" which stressed broad money market sources as a means of supplementing a bank's customer deposit base, most of Hong Kong's commercial banks, including foreign and local banks, are still lacking the commitment to manage the entire balance-sheet for the highest, most consistent growth in earnings possible over the long haul.

To help focus on the entire balance sheet while holding to prudent banking practices, banks should consider the establishment of asset/liability management committees which can begin to meet informally. In the case of small banks, the president and a few key officers can jointly guide and be active in loan, investment, trading account and money market decisions. For larger banks, a formal asset/liability management committee is better , with representatives from every significant portion of the balance sheet, i.e. heads of incoming producing groups and fund sources. These might include the chairman and president to make high-level decisions and symbolize commitment; the chief financial officer; the controller

to generate data for overall corporate profit planning activities; the head of commercial loans; the head of retail loans; the head of international loans; the investment manager; the officer who coordinates funding, such as a treasurer or funds manager; an economist to give the economic, monetary and market picture; and possibly the head of credit policy supervision.

The responsibilities of the asset/liability management committee should include directing the overall acquisition and allocation of funds to maximize earnings and insure adequate liquidity; presenting recent performance as well as forecasts and budgets of loan demand and funding sources, so that the committee can assess liability and loan pricing strategies; establishing funds acquisition practices and options for the allocation of loans; monitoring earnings spread, asset/liability distributions and maturities; determining how to deal with reserve requirements for money market activities; reviewing budget variances; and, most important, developing action plans based on the causes of these variances.

While all of these responsibilities are essential, the critical or basic function of the asset/liability management committee changes with market conditions. For example the primary current concern might be insuring sufficient liquidity. A few months down the

line the focal point might shift to strategies for acquiring reasonably priced short-term money over a long period of time. Still later, the critical concern might be developing adequate capital to support earnings assets growth or expansion into new lines of business.

By recognizing that the critical decision points of asset/liability management will change over time and that strategic initiatives (like financial futures, purchased funds and money market operations) can affect very different outcomes, the commercial banks in Hong Kong could substantially improve their evolving profit positions and thus their competitiveness in the international finance markets. On a near term level, they could charge higher commitment fees, vigorously manage their money market operations, expand their investment options, venture into new loan markets and into loan originations and develop their techniques in tax planning. For the intermediate term, they could improve their profitability analysis and improvement efforts, increase their market shares through increased distribution channels and possibly affiliates and branches in other countries, develop new products and services and implement a productivity improvement. On a long-term basis, they could modify their management techniques by employing a more structured and coordinated decision process, aided by new technology

and financial techniques for the monitoring and testing of alternatives. At the same time, they could expand into international markets and enlarge their domestic base through acquisitions, branch development and/or electronic payment systems.

All of these asset/liability management strategies add up to income stabilization, asset and earnings growth; adequate liquidity and capital -- and consistent high performance.

APPENDIX I

THE DURATION OF A FINANCIAL INSTRUMENT

More precisely, the duration (D) of a financial instrument is defined by the formula:

$$D = \frac{\sum_t t \, PV_t}{P}$$

$$PV_t = \frac{C_t}{(1 + r)^t}$$

where

$\sum_t$ = summation sign

t = number of years from the present

PV_t = present value of a payment, C_t, scheduled t years from the present

P = price of the instrument ($P = PV_t$)

r = interest rate used to discount payments

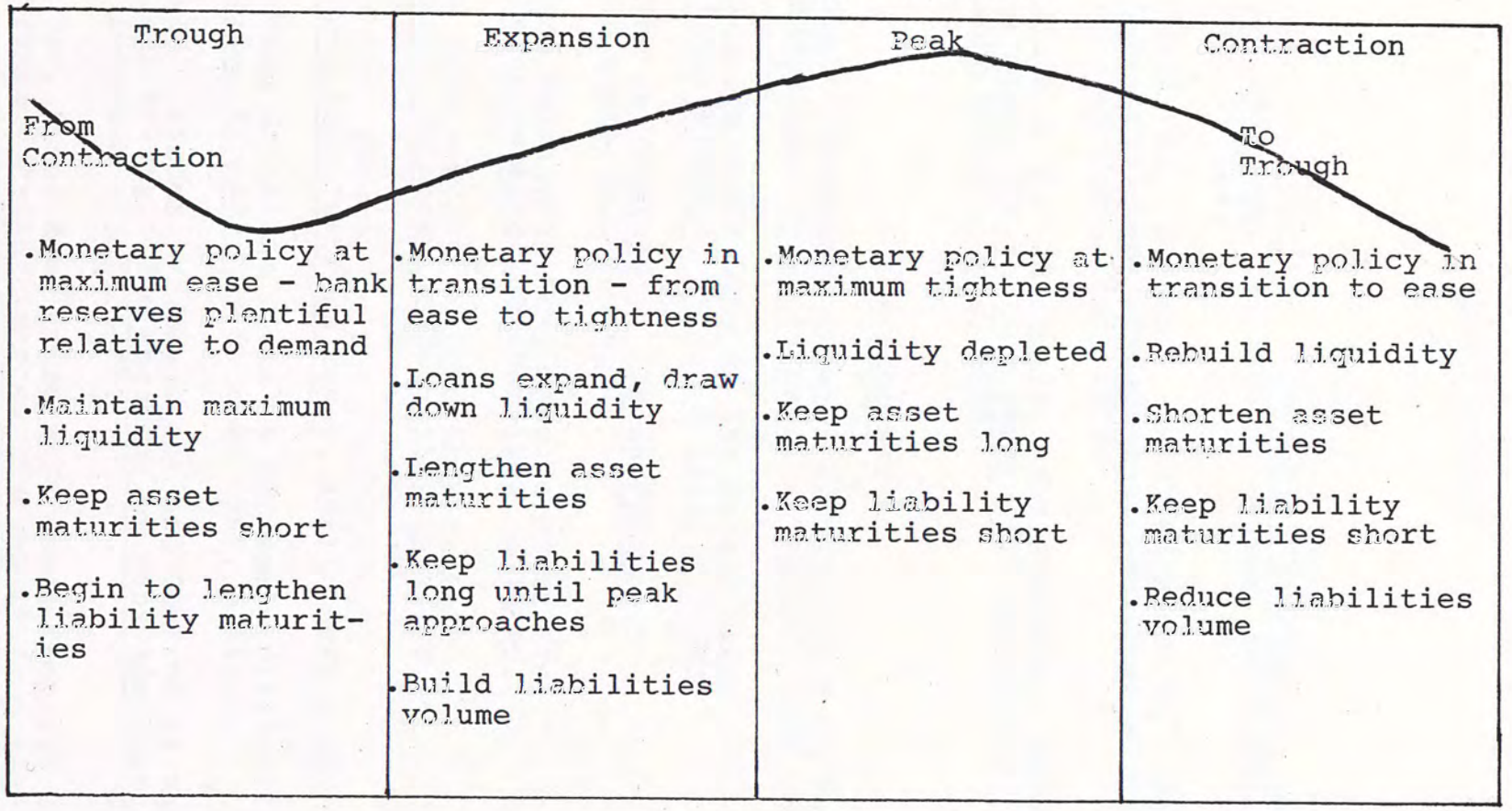
Mathematically, duration is a weighted sum of the present value of payments made by a financial

present value of payments made by a financial instrument. The present value of each payment, PV_t, is multiplied by a weight, t, equal to the number of years from the present that the payment is received. The weighted sum, tPV_t, is then divided by the price or present value of the instrument, P. The dimension of the resulting quotient is years from the present. Duration is the number of years from the present that an instrument earns its average payment, in present value terms. The duration of an instrument is usually less than its term to maturity, the number of years from the present that an instrument makes its final payment.

Source : Karlyn Michell. "Interest Rate Risk Management At Tenth District Banks." Economic Review, May 1985 : 7

APPENDIX II

THE INTEREST RATE CYCLE AND
BANK RESPONSE IN MANAGING LIQUIDITY



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